

**UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION  
COAL MINE SAFETY AND HEALTH**

**REPORT OF INVESTIGATION  
Underground Coal Mine  
Fatal Handling Material Accident  
January 6, 2007**

at

**Elk Creek Mine  
Oxbow Mining, LLC  
Somerset, Gunnison County, Colorado  
ID No. 05-04674**

**Accident Investigators**

**William E. Vetter  
Coal Mine Safety and Health Inspector**

**Danny C. Cerise  
Coal Mine Safety and Health Inspector**

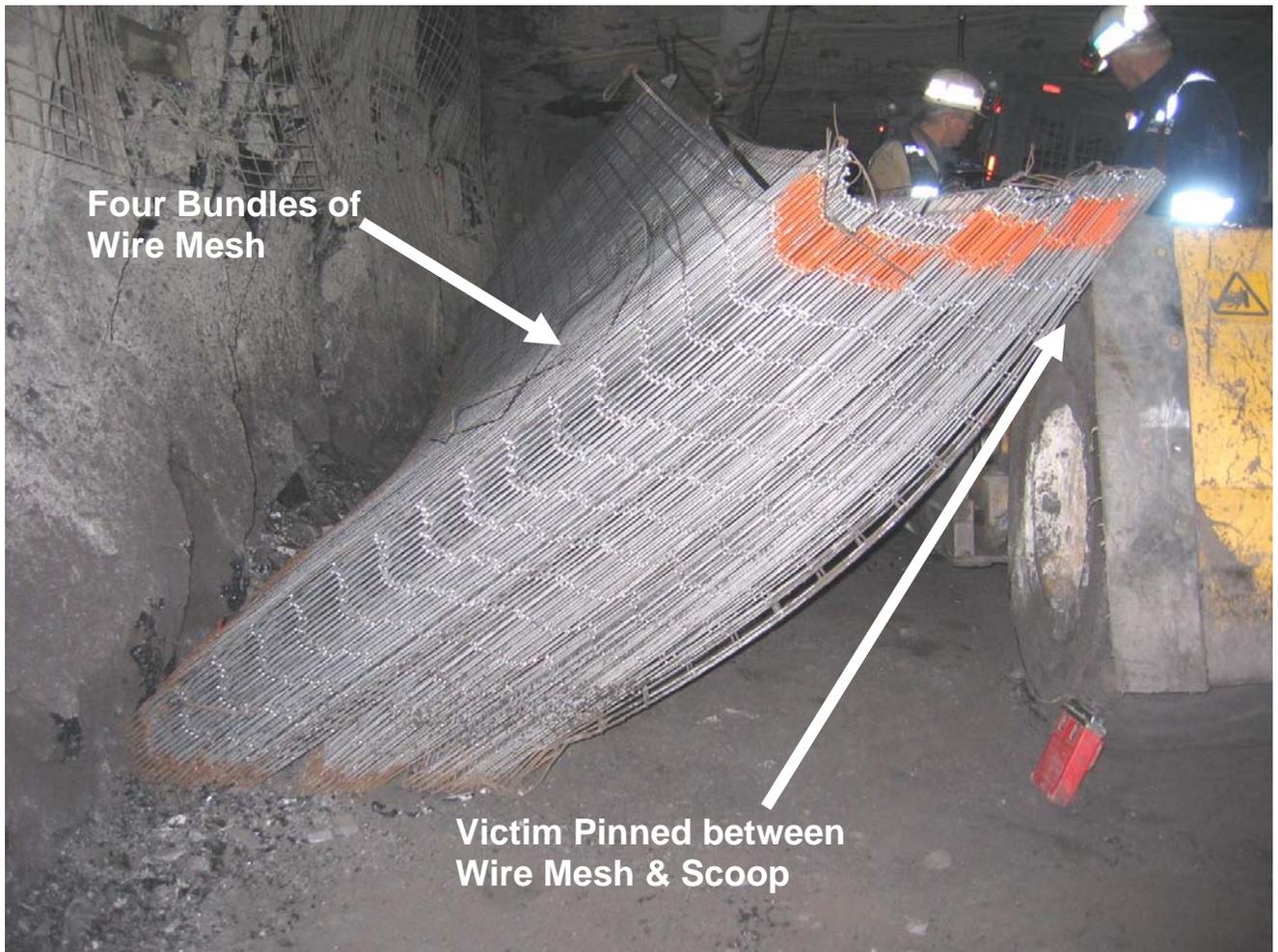
**Kent L. Norton  
Educational Field Services Training Specialist**

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Allyn C. Davis, District Manager**

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**PHOTO OF ACCIDENT SCENE**  
**11 WEST HG SECTION, NO. 2 ENTRY, CROSSCUTS 33-34**



## **OVERVIEW**

On Saturday, January 6, 2007, at approximately 12:30 p.m., Jeremy Garcia, a 26 year old utilityman, was fatally injured when welded wire mesh panels (also referred to as screens) fell over, pinning him against a diesel-powered scoop. Garcia was attempting to remove one of the four bundles of wire mesh panels by cutting the steel banding straps that held them together, when the accident occurred. The bundles were stored in an upright position leaning against the coal rib. Prior to the accident, Garcia had left the face area with the scoop and traveled to retrieve the wire mesh panels to re-supply the roof bolting operation. He parked the scoop beside the bundles of wire mesh panels. As the top banding strap at the outby end of the bundles was cut, the wire mesh became off-balanced and fell, pushing Garcia against the scoop.

The accident occurred because the bundles of wire mesh panels, stored in an upright position, were not adequately secured to prevent them from falling when the banding straps were cut and the stored energy in the bundles was released causing them to flex and fall. Management's failure to ensure that safe job procedures were used in storing and handling the bundles of wire mesh panels contributed to the cause of the accident. The location of the scoop near the bundles of wire mesh created a restricted and hazardous work area contributing to the cause of the accident.

## **GENERAL INFORMATION**

The Elk Creek Mine is an underground coal mine operated by Oxbow Mining, LLC, a subsidiary of Oxbow Carbon & Minerals, Inc. Operations began in 2000. It is located at Somerset, Gunnison County, Colorado. The principal officers for the mine at the time of the accident were: James T. Cooper, President; Randal Litwiller, Mine Manager; Terrance J. Hayes, Safety Director; and Jens H. Lange, Production Superintendent.

The mine extracts coal from the D2 seam, which ranges in thickness from 8 to 18 feet. Nominal mining height is 9.5 feet. The mine operates one retreating longwall section and two continuous miner development sections.

At the time of the accident, the mine produced approximately 14,500 tons of coal per day and employed 304 persons with 246 underground, 45 on the surface, and 13 in the office. In 2006, the mine produced 5,128,389 tons of coal. The mine operated seven days per week, using two eight-hour production shifts and one maintenance shift per day.

Prior to the accident, the last Mine Safety and Health Administration (MSHA) regular inspection was completed on December 29, 2006. The non-fatal days lost (NFDL) incidence rate for the mine for 2006 was 6.17. The National incidence rate for underground coal mines for the same period was 4.99.

## **DESCRIPTION OF ACCIDENT**

On Saturday, January 6, 2007, the day shift production crew for the 11 West HG development section, supervised by Harold Shiflet, section foreman, began their shift at 7:00 a.m. They traveled underground from the surface arriving on the section at approximately 7:25 a.m. Shiflet conducted a brief communications meeting with the nine member crew, informing them of the

general conditions on the section and the locations of the section equipment. Following the communications meeting, the miners reported to their respective assigned work positions. Mining commenced soon after and proceeded without incident throughout the first half of the shift.

At approximately 10:20 a.m., Jeremy Garcia, utilityman (victim), and Rodger Polson, mechanic/electrician, were instructed by Shiflet to relieve the roof bolter operators while the roof bolters had lunch. Shiflet also told Garcia he could take his lunch break after relieving the roof bolters. Garcia and Polson installed roof support in the No. 2 entry working place while coal was being mined from the No. 3 entry working face. When the roof bolter operators returned from lunch, Garcia went to clean the No. 1 entry working place with the diesel powered scoop.

At approximately 12:10 p.m., Garcia finished cleaning the No. 1 entry face area. He then traveled to where roof bolting supplies were being stored between crosscut Nos. 33 and 34 in No. 2 entry to retrieve a bundle of wire mesh panels to re-supply the roof bolting operation. This was approximately 500 feet outby the last open crosscut. Garcia parked the scoop near the wire mesh panels that had been stored in an upright position against the left rib. As Garcia cut the top banding strap at the outby end of the panels, the wire mesh became off-balanced and fell, pinning him against the scoop.

Peter Darland, Safety Engineer, traveled into the 11 West HG section for a routine safety inspection, arriving at approximately 12:35 p.m. After parking his vehicle in No. 33 crosscut, he walked up No. 2 entry and found Garcia's parked scoop. Seeing the scoop with the rear lights shining toward him, he walked to the right rear of the scoop and continued traveling to the operators cab. He checked the idling machine to assure the park brake was set and a wheel was chocked. As he walked back toward the rear of the machine he noticed Garcia pinned against the left front fender of the scoop. Garcia's back was against the fender and the wire mesh panels against his chest.

Realizing that he would not be able to move the screen by himself, Darland ran inby to crosscut No. 35 where he met Polson and called for him to help. Polson, who was by the section transformer, opened the control breakers to all the section equipment in order to get the attention of the rest of the crew. From No. 2 entry, Darland saw Levy Garcia (no relation to the victim) in the No. 1 entry and instructed him to bring the skid steer loader. Levy Garcia took the loader parked in crosscut No. 35 between Nos. 1 and 2 entries and drove it outby in No. 2 entry to the accident scene.

Shiflet was at the roof bolting machine in the No. 2 entry face when Polson de-energized the section equipment. He started toward the section transformer to investigate the loss of power and traveled outby in No. 2 entry. He noticed a considerable amount of commotion beyond crosscut No. 35. Alarmed by the hurried activity, he traveled to the accident scene and assisted Darland and Polson by physically pushing on the screen while Levy Garcia pushed with the skid steer loader. Once Garcia was freed and moved to the rear of the scoop, Polson checked for a pulse. Finding none, he began to administer cardiopulmonary resuscitation (CPR). Shiflet traveled back to the "kitchen" for first-aid supplies and used the mine phone to notify the surface dispatch person of the incident. Surface personnel were instructed to respond with the underground ambulance and to notify North Fork Valley Ambulance service of the accident. Approximately five minutes after CPR was started, Jessica Tutor, material handler and certified

emergency medical technician, arrived and assisted with CPR. First aid and CPR were administered while Garcia was transported to the surface in the underground ambulance. He was transferred to the awaiting North Fork Valley ambulance and taken to the Delta County Memorial Hospital in Delta, Colorado where he was pronounced dead. The cause of death was determined to be mechanical asphyxiation.

## **INVESTIGATION OF THE ACCIDENT**

Darland called the MSHA Call Center and reported the accident at approximately 1:10 p.m., January 6, 2007. He then called Larry W. Ramey, MSHA Field Office supervisor, Delta, Colorado, at 1:18 p.m., and notified him of the accident. MSHA personnel were immediately dispatched to the mine. Ramey and Larry W. Neil, Coal Mine Safety and Health Inspector, Delta, Colorado, arrived at the mine at approximately 3:10 p.m. and a Section 103(k) order was issued to ensure the safety of persons at the mine until an investigation could be conducted. Danny C. Cerise, Coal Mine Safety and Health Inspector, Delta, Colorado, arrived at the mine at approximately 4:05 p.m. to assist in the initial investigation. The entire MSHA accident investigation team arrived at the mine on January 7, 2007, and continued the investigation. Officials from the Colorado Mine Safety and Training Program also joined the investigation on January 7, 2007. Refer to Appendix A for a list of persons participating in the investigation. The accident scene was examined including taking measurements, documents were obtained, and witnesses were interviewed. The investigation at the mine site concluded on January 9, 2007.

## **DISCUSSION**

### **Wire Mesh Panels**

The wire mesh panels were constructed of 6 gauge wire with 19 line wires welded to 51 cross wires. Openings were 4 inches by 4 inches, except on the long edges where they were 2 inches by 4 inches. The panels had 2-inch by 4-inch openings at 56-inch spacings along the length to accommodate the bolting pattern. The panels were 16 feet long and 5 feet 8 inches wide. Each panel weighed 58.3 pounds. See Appendix B for a sketch of the panel dimensions.

The panels were manufactured by Raynel Company, Inc., Santa Ana, California, and were shipped in bundles of 25 each with four bundles connected together in a group. Each bundle weighed approximately 1,500 pounds, with the four bundles weighing approximately 6,000 pounds. Each bundle was tied together with 9 gauge wire and the four bundles were secured by four Signod steel straps. The straps, 1.25-inches wide and 0.029-inches thick, were coursed through the bundles at four locations, two on each long side near the ends. The straps were secured by the manufacturer using an air-pressure device at 90 psi creating 1,400 pounds of pressure at the secure point. This banding of the bundles compressed the group of wire mesh panels, creating stored energy within the bundles that was released when the straps were cut. In addition to the steel straps, four heavy gauge wires were used to hold the bundles together. See Appendix C for a picture of one of the straps and heavy gauge wires in place on the four bundles.

Two groups of wire mesh bundles were brought into the 11West HG section on Thursday, January 4, 2007. One of the groups was used without incident and the other was the one involved in the accident. The material handler who brought in the wire mesh leaned the bundles against the rib using the skid steer loader. He stated that he secured the bundles to the rib with

hanger webbing straps and pieces of 9 gauge wire. The straps were approximately 16 inches long with metal hooks on each end. The hooks attached to the bundles and then to wire mesh that was bolted to the rib.

### Accident Scene

The mine floor where the wire mesh bundles were placed sloped down and away from the rib at a 9.5% grade. The entry was approximately 11 to 12 feet high. The scoop was parked facing inby in the entry with the bucket and front wheels parallel to and approximately 4 to 5 feet away from the bundles. Garcia positioned himself between the bundles and the left front wheel of the scoop to cut the top metal strap holding the bundles together at that location. Garcia was found pinned against the wheel fender facing the bundles with his back against the fender. The top of the fender was 44 inches above the ground.

Wire mesh panels were bolted to the coal rib at the accident site. The group of bundles had been secured to the rib wire mesh with one hanger webbing strap at the inby end and a piece of 9 gauge wire at the outby end (Garcia's end) of the bundles. The strap was found loose with one end hanging from the rib wire mesh. One of the hooks on the strap was spread wider than the original opening as compared with a strap from the warehouse. The 9 gauge wire was found detached from the rib wire mesh and was hanging from the wires on top of the bundles. The rib wire mesh was deformed but not broken at the location where the wire had been attached, approximately 68 inches above the mine floor. See Appendix D for a picture of the outby end of the bundles showing the wire that was used to secure the bundles to the rib and the steel strap that was cut by Garcia.

### Handling Procedures for Wire Mesh Panels

The mine operator did not have written procedures for breaking apart the group of wire mesh bundles in preparation to transport a bundle to the roof bolting operation. Interviews indicated that different techniques were used, such as placing the scoop bucket against the bundle and cutting the top straps from inside the scoop bucket. Others parked the scoop away from the bundles when cutting the straps. Most indicated that they secured the bundles to the rib wire mesh before cutting the straps. Foremen and an experienced utility person stated that they instructed miners who handled the wire mesh panels to secure the bundles to the rib prior to cutting the straps. Harold Shiflet, section foreman, stated that he made sure he told Garcia to secure the bundles before cutting the straps. After the accident, the mine operator adopted written procedures for handling wire mesh panels stored in an upright position, which included using chains to secure bundles to the rib, securing the bundles with a piece of mining equipment when cutting the steel straps, and not working between the equipment and the upright bundles when cutting the straps. In addition, a Safeguard was issued to the mine operator to require safe handling and transportation of wire mesh panels. See the Enforcement Action section of this report for details on the Safeguard.

### Training and Mining Experience

Garcia had 2 years 27 weeks of mining experience with the last 15 weeks at the Elk Creek Mine. He received experienced miner training on September 25, 2006, when he started at the Elk Creek Mine. A review of training records indicated Garcia had been task trained in a number of

occupations including Wagner scoop operator, section utility person, and roof bolter operator. He worked as a utilityman at the Elk Creek Mine for 11 weeks.

### **ROOT CAUSE ANALYSIS**

An analysis was conducted to identify the most basic causes of the accident that were correctable through reasonable management controls. The following root cause was identified:

1. *Root Cause:* Management did not have effective training and safe work procedures to address the proper storage and handling of wire mesh panels used on the development miner sections for roof and rib control.

*Corrective Action:* The mine operator adopted written procedures/instructions for handling wire mesh panels which included using chains to secure upright bundles to the rib, securing the bundles with a piece of mining equipment when cutting the steel straps, and not working between the equipment and the upright bundles when cutting the straps. A Safeguard was also issued related to this corrective action.

### **CONCLUSION**

On Saturday, January 6, 2007, at approximately 12:30 p.m., Jeremy Garcia, a 26 year old utilityman, was fatally injured when welded wire mesh panels (also referred to as screens) fell over, pinning him against a diesel-powered scoop. The accident occurred because the bundles of wire mesh panels, stored in an upright position, were not adequately secured to prevent them from falling when the banding straps were cut and the stored energy in the bundles was released causing the bundles to flex and fall. Management's failure to ensure that safe job procedures were used in storing and handling the bundles of wire mesh panels contributed to the cause of the accident. The location of the scoop near the bundles of wire mesh created a restricted and hazardous work area contributing to the cause of the accident.

Approved by:

Signed: Allyn C. Davis

April 18, 2007

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Allyn C. Davis  
District Manager

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Date

## **ENFORCEMENT ACTIONS**

A 103(k) Order No. 7291152 was issued to Oxbow Mining LLC to ensure the safety of the persons on the 11 West HG section until an investigation could be conducted and the section returned to normal operations.

A 314(b) Safeguard No. 7290921 was issued to Oxbow Mining LLC according to 30 CFR 75.1403. While preparing wire mesh screens for transportation on January 6, 2007, in the 11 West HG development section, a utilityman was fatally injured when the bundles of screens (referred to as a bunk), stored in an upright manner, fell over pinning the miner against an adjacent scoop. This notice to provide safeguard applies to the safe transportation of screens in the mine. The following procedures shall apply:

1. If the bunk of screens is unloaded whole and placed in an upright position against the coal rib, the screens shall be leaned against the rib at a stable angle and shall be secured from falling by chaining the bunk to the rib or rib support in a manner to adequately support the load. The chains or other devices used for this purpose shall be rated to hold the load. The rib attachments shall be adequate to hold the load.
2. When the bunk is broken into smaller bundles, the screens shall be held in position with a piece of mobile mining equipment while the bands are being cut. Bottom bands shall be cut first.
3. The person cutting the metal bands shall not be located between the screens and the equipment.
4. Prior to moving the mobile mining equipment away from the bunk, the remaining screens shall be secured as per Item 1.

## APPENDIX A

### List of Persons Participating in the Investigation

#### OXBOW MINING, LLC OFFICIALS

James T. Cooper	President
Randal Litwiller	Mine Manager
Jens H. Lange	Production Superintendent
Terrance J. Hayes	Safety Director
Robert L. Koch	Chief Engineer
Peter C. Darland	Safety Engineer
Douglas A. Smith	Senior Mining Engineer
Harold A. Shiflet	Section Foreman

#### OXBOW MINING, LLC EMPLOYEES

Rodger Polson	Mechanic/Electrician
Levy Garcia	Shuttle Car Operator
Kevin Leger	Shuttle Car Operator
Jessica Tutor	Material Handler
Kevin Long	Miner Operator
Jerome Gallegos	Roof Bolter Helper
Juan Leon	Miner Operator/Helper
Shaun Peterson	Roof Bolter Operator
Mathew Manzanares	Roof Bolter Operator
Steven N. Henderson	Material Handler

#### COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY MINE SAFETY AND TRAINING PROGRAM

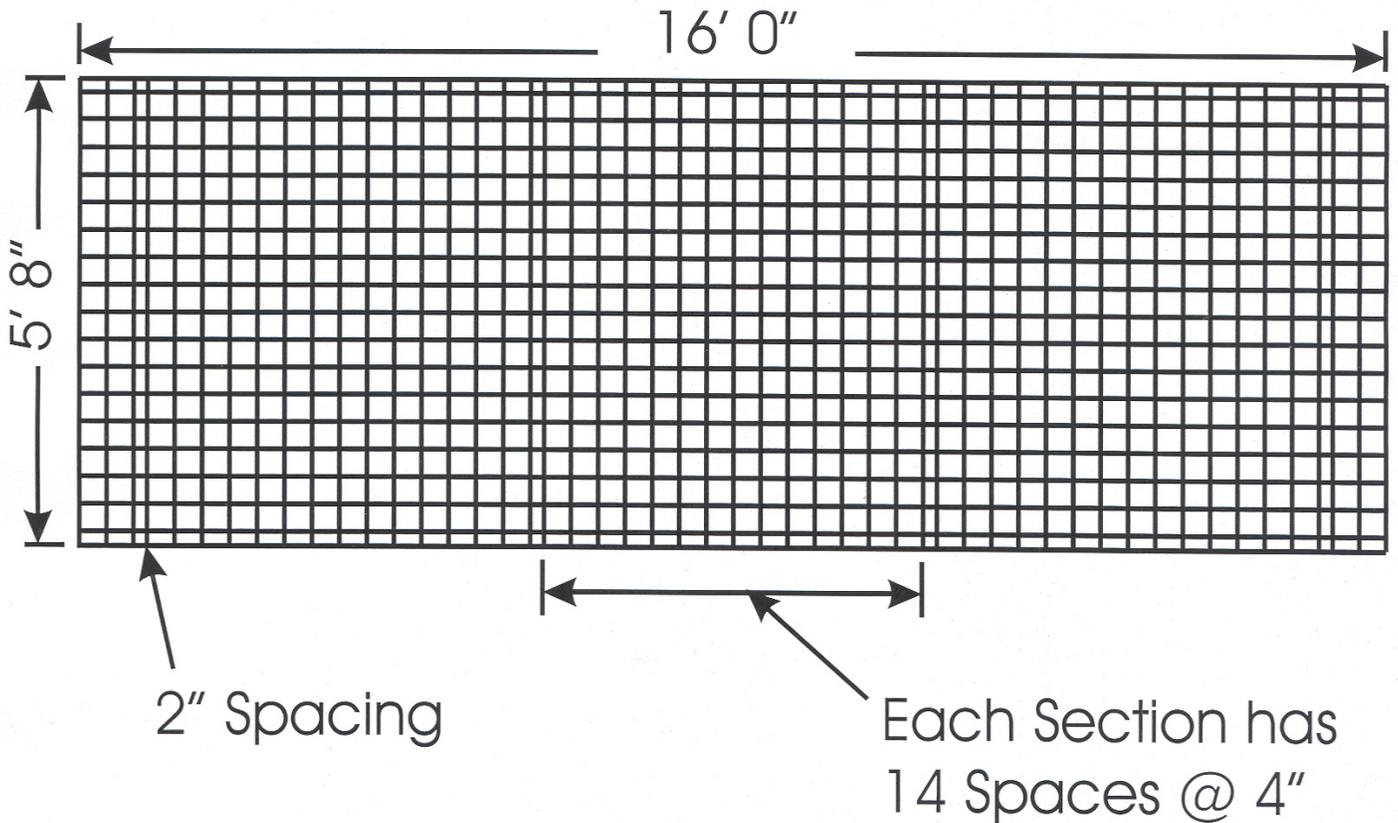
Scott B. Waybright	Mine Inspector/Safety Trainer
Harry A. Lovely	Mine Safety Trainer/Mine Rescue Coordinator

#### MINE SAFETY AND HEALTH ADMINISTRATION

William E. Vetter	Coal Mine Safety and Health Inspector
Danny C. Cerise	Coal Mine Safety and Health Inspector
Kent L. Norton	Educational Field Services Training Specialist

## APPENDIX B

### SKETCH OF WIRE MESH PANEL

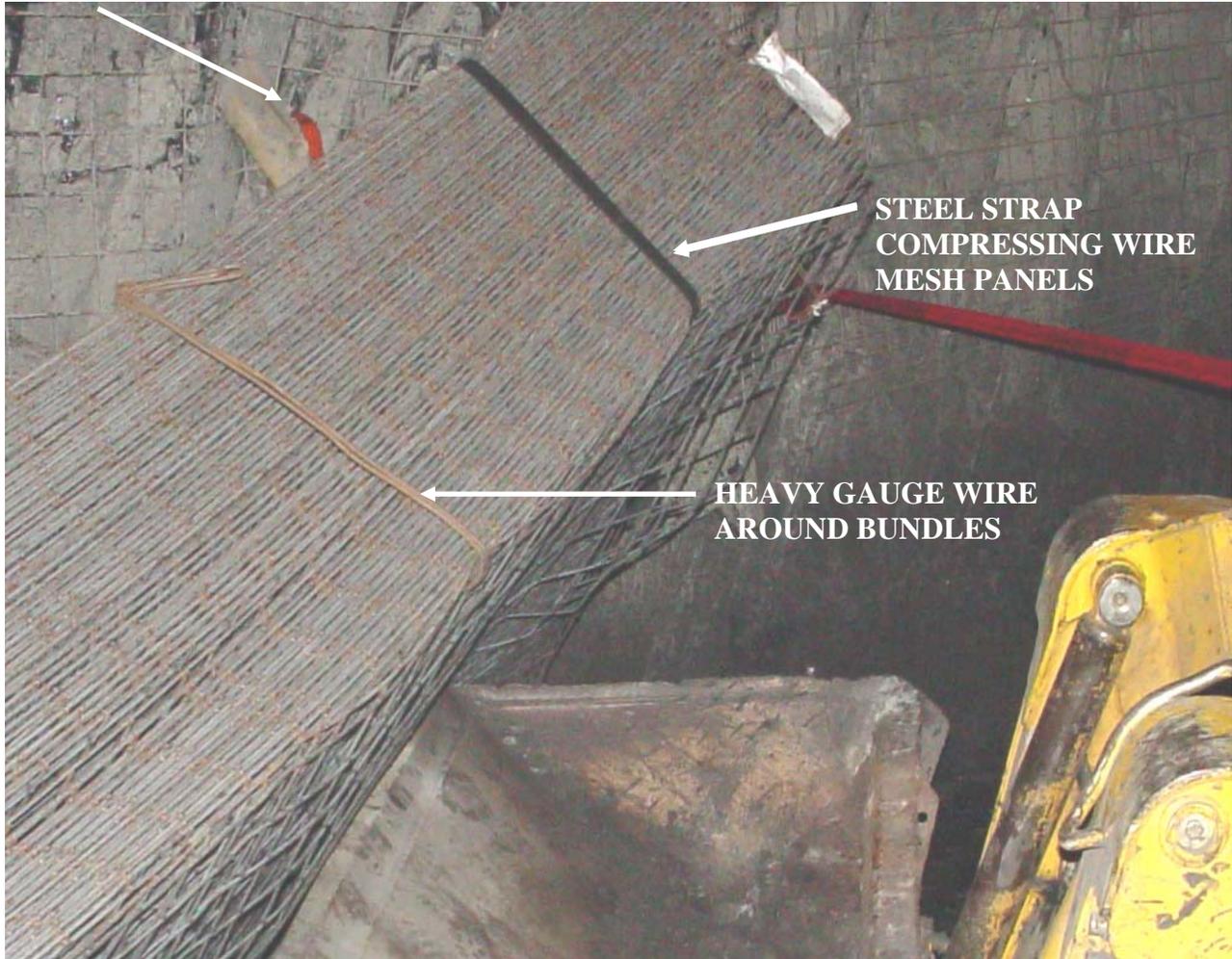


- Mesh is 16' by 5'8"
- Openings – 4" by 4"
- 6 gauge wire
- 2" openings between sections
- 2" wide openings on long edges
- Each panel weighs 58.3 pounds

## APPENDIX C

### PICTURE OF STEEL STRAP ON INBY END OF BUNDLES

**WEBBING STRAP USED TO SECURE BUNDLES TO RIB**



**APPENDIX D**

**PICTURE OF OUTBY END OF BUNDLES SHOWING CUT STEEL STRAP AND WIRE USED TO SECURE BUNDLES TO RIB**

**LOOSE END OF HEAVY GAUGE WIRE**

**CUT END OF STEEL STRAP**

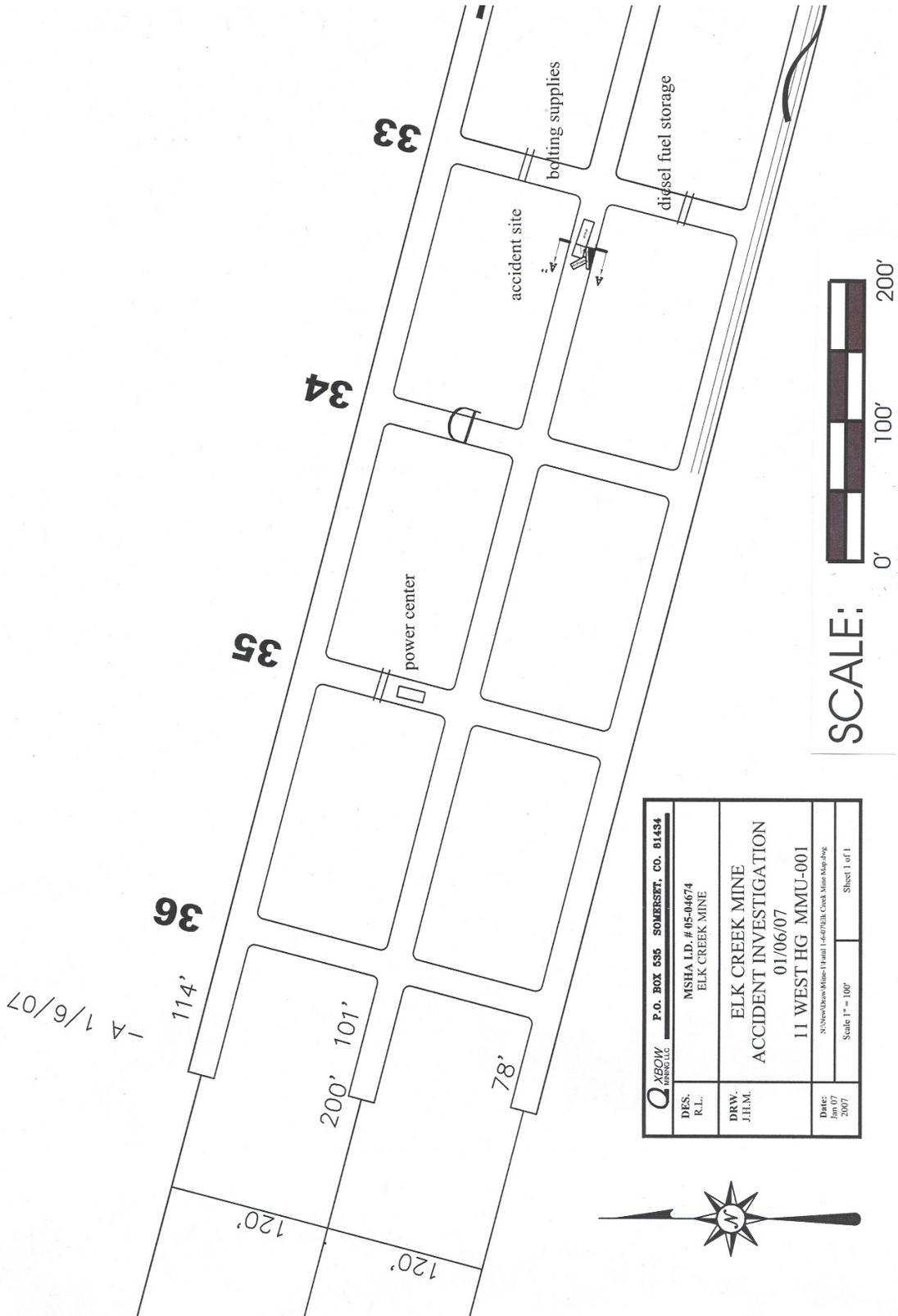


**CUT STEEL STRAP  
PULLED THROUGH FIRST  
2 BUNDLES**

**WIRE USED TO SECURE BUNDLES TO RIB**

# APPENDIX E

## 11 WEST HG SECTION MAP SHOWING LOCATION OF ACCIDENT



## APPENDIX F

### VICTIM INFORMATION – MSHA FORM 7000-50b

**Accident Investigation Data - Victim Information**

**U.S. Department of Labor**  
Mine Safety and Health Administration



Event Number: 4 4 7 5 3 2 9

<b>Victim Information:</b> 1												
1. Name of Injured/Ill Employee: <i>Jeremy Garcia</i>				2. Sex: <i>M</i>		3. Victim's Age: <i>26</i>		4. Last Four Digits of SSN:			5. Degree of Injury: <i>01 Fatal</i>	
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 01/06/2007 b. Time: 12:30</i>							7. Date and Time Started: <i>a. Date: 01/06/2007 b. Time: 7:00</i>					
8. Regular Job Title: <i>016 Utilityman/laborer</i>					9. Work Activity when Injured: <i>028 Handling materials</i>					10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
11. Experience a. This			b. Regular			c. This			d. Total			
Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	
Work Activity:	<i>0</i>	<i>15</i>	<i>0</i>	Job Title:	<i>0</i>	<i>15</i>	<i>0</i>	Mine:	<i>0</i>	<i>15</i>	<i>0</i>	
12. What Directly Inflicted Injury or Illness? <i>124 Wire mesh panels/screens</i>						13. Nature of Injury or Illness: <i>110 Asphyxiation</i>						
14. Training Deficiencies: Hazard: <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> Annual: <input type="checkbox"/> Task: <input type="checkbox"/>												
15. Company of Employment:(If different from production operator) <i>Operator</i> Independent Contractor ID: (if applicable)												
16. On-site Emergency Medical Treatment: Not Applicable: <input type="checkbox"/> First-Aid: <input type="checkbox"/> CPR: <input checked="" type="checkbox"/> EMT: <input checked="" type="checkbox"/> Medical Professional: <input type="checkbox"/> None: <input type="checkbox"/>												
17. Part 50 Document Control Number: (form 7000-1) <i>220070160064</i>						18. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>						

<b>Victim Information:</b>												
1. Name of Injured/Ill Employee:				2. Sex:		3. Victim's Age:		4. Last Four Digits of SSN:			5. Degree of Injury:	
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:							7. Date and Time Started:					
8. Regular Job Title:					9. Work Activity when Injured:					10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input type="checkbox"/>		
11. Experience: a. This			b. Regular			c. This			d. Total			
Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	
Work Activity:			Job Title:			Mine:			Mining:			
12. What Directly Inflicted Injury or Illness?						13. Nature of Injury or Illness:						
14. Training Deficiencies: Hazard: <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> Annual: <input type="checkbox"/> Task: <input type="checkbox"/>												
15. Company of Employment: (If different from production operator) Independent Contractor ID: (if applicable)												
16. On-site Emergency Medical Treatment: Not Applicable: <input type="checkbox"/> First-Aid: <input type="checkbox"/> CPR: <input type="checkbox"/> EMT: <input type="checkbox"/> Medical Professional: <input type="checkbox"/> None: <input type="checkbox"/>												
17. Part 50 Document Control Number: (form 7000-1)						18. Union Affiliation of Victim:						

<b>Victim Information:</b>												
1. Name of Injured/Ill Employee:				2. Sex:		3. Victim's Age:		4. Last Four Digits of SSN:			5. Degree of Injury:	
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:							7. Date and Time Started:					
8. Regular Job Title:					9. Work Activity when Injured:					10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input type="checkbox"/>		
11. Experience: a. This			b. Regular			c. This			d. Total			
Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	
Work Activity:			Job Title:			Mine:			Mining:			
12. What Directly Inflicted Injury or Illness?						13. Nature of Injury or Illness:						
14. Training Deficiencies: Hazard: <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> Annual: <input type="checkbox"/> Task: <input type="checkbox"/>												
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17. Part 50 Document Control Number: (form 7000-1)						18. Union Affiliation of Victim:						